

SECTION 09682
CARPET AND CARPET TILE

PART 1 GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES

Comply with section 09002.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01300, "Submittals:"

SD-17, Manufacturer's Catalog Data

SD-33, Fabrication/Erection/Installation Drawings

Edge details, or necessary manufacturer's standard cuts indicating same Seam locations and the direction of carpet

Drawings shall be marked for seaming as follows:

All length seams shall be indicated.

All cross seams necessary due to layout of areas shall be at an absolute minimum and shall be indicated.

SD-40, Listing of Product Installations

List and brief description of similar work satisfactorily completed, with locations, dates of contracts, and names and addresses of owners

SD-42, Material, Equipment, and Fixture Lists

List of facilities and equipment available

SD-50, Samples

Six samples each at least 8-inches long of vinyl and aluminum edge stripping

Six samples of seam tape and a sample at least 8-inches long of seamed carpet

Six samples of each accessory

SD-76, Certificates of Compliance

Experience record showing the Contractor's training and experience in similar work

SD-91, Records

1.4 DELIVERY, HANDLING, AND STORAGE

Materials shall be protected from weather, soil, and damage during delivery, storage, and installation.

Materials shall be delivered in original unopened packages, containers, or bundles bearing brand name and name of material. Attach register number or stencil on carton. Store in a safe, dry, clean, and well ventilated area.

Do not open containers until needed for installation unless verifying inspection is required. Do not stock more than eight cartons high.

1.5 INSTALLATION ESTIMATE

SD-91, The Contractor shall, in estimating cost of his work under this Contract, prepare and submit to the Government an estimate of the number of square yards of carpet he would normally require to complete the installation as indicated and specified. This yardage shall include extension of carpet into toe spaces and recesses, under radiation units, and into spaces adjacent to areas indicated to receive carpet. If more than one color and quality is required, the above-mentioned estimate shall be subdivided by color and quality.

Unless otherwise indicated by the Contractor on said submission, it will be assumed that an equal yardage of cushion will be sufficient to complete the installations.

1.6 PERSONNEL QUALIFICATIONS

The Contractor shall be experienced in the supervision of carpet installation and have at least 5 years' experience. Actual work shall be done by qualified and experienced personnel working under his supervision, or under the supervision of a experienced supervisor who has been doing this type of work for at least 5 years.

1.7 GUARANTEE

The Contractor shall guarantee workmanship and materials against defects for a period of 1 year from date of building occupancy, and shall make any adjustments and replace defective work without

additional cost to the Government. Carpet that becomes loose or wrinkled within this period shall be restricted or completely relayed at no additional cost to the Government.

1.8 FIELD MEASUREMENTS

The Contractor shall measure and verify dimensions of areas to receive his materials. He shall be responsible for the proper installation and fitting of carpeting, cushion, and accessories.

PART 2 PRODUCTS

2.1 PHYSICAL REQUIREMENTS

Provide carpet of tufted, woven, or fusion bonded construction with a secondary backing of vinyl or preacted polyurethane hardback, or a woven polypropylene fabric with a thermoplastic mixture of ethylene/vinyl acetate polymer and a hydrocarbon resin (hot melt). Provide carpet of first quality and free and visual blemishes, streaks, poorly dyed areas, and other physical and manufacturing defects. Provide carpet of the modular type, identical in size, 18-inches by 18-inches plus or minus, 1/64 inch or 23 5/8-inches by 23-5/8-inches plus or minus 1/64-inches, precision die cut for complete interchangeability. Sides shall be straight and the corners square. Tufts shall be firmly secured at the edges as in the other areas of the carpet/carpet tile.

Carpet tile must lay flat on a flat surface without curling, warping, buckling, cupping, or doing and without any individual tiles or from tile-to-tile. Provide carpet tile that does not stretch or shift position in sue when installed according to the carpet tile manufacturer's instructions.

Use non-toxic carpet materials and treatment, free from other recognized health hazards, and conforming to the following:

Surface Texture: Loop Pile (unless otherwise indicated).
Pile Fiber: Continuous filament Polyporylene Olefin.
Pile Weight: 28 oz. per sq. yd. minimum.
Pile Density: 4000 minimum
Pattern and Color: (As indicated).

2.1.1 Surface Texture

2.1.1.1 Loop Pile

Provide either single-level uncut pile or textured uncut pile creating an overall nondirectional surface. Maximum differential between finished pile heights (high and low pile loops) of textured pile is 0.125 inch.

2.1.1.2 Plush-cut Pile

Level cut pile fabrics.

2.1.1.3 Frieze (Hard Twist)

Provide cut pile fabric made foam plied, unbalanced, tightly twisted, heat-set yarns to create a textured surface with clearly defined tufts.

2.1.2 Pile Yarn

Do not use reclaimed yarn fibers from any woven, tufted, knitted, or felted products. Do not use undrawn fiber in spun yarn. Provide spun yarn of at least two ply for loop pile carpet tile. Use yarn setting method sufficient to assure permanent texture retention under normal use conditions, cleaning, and shampooing. Use autoclave or continuous heat process to set yarns in cut pile construction; yarns for fusion and staple lengths may be subject to normal manufacturing tolerances with the following limitations:

Acceptable variance in staple length, plus or minus 10 percent.

Acceptable denier variance, plus or minus 10 percent, in individual filament denier and plus or minus 3 percent in average denier.

2.1.2.1 Blends

Should not be more than two fibers listed below and not less than 15-percent of either fiber. Treat acrylic and modacrylic fibers blended together as a single fiber type. The major component of a blend is the governing fiber in construction interpretation, except for weight. For example, treat a construction of 70-percent acrylic and 30-percent nylon as acrylic. Do not add more than 3-percent metallic filaments or other materials to blends to reduce static propensity.

2.1.2.2 Twist and Twist Multiplier

For loop pile carpet tile, ASTM D 1423. The minimum twist multiplier for singles is 2.75; minimum twist for a 2-ply yarn is 80-percent of the twist in the singles yarns; for a 3-ply yarn, 70-percent; and for a 4-ply yarn, 60-percent.

2.1.2.3 Staple Nylon

Carpet fiber with average fiber size of 15 denier or coarser and minimum staple length of 6 inches.

2.1.2.4 Continuous Filament Nylon

Not less than second generation, continuous high bulk or textured

carpet fiber with average filament size of 15 denier or coarser modified to provide increased translucence or opacity for soil hiding.

2.1.2.5 Staple Acrylic

Carpet fiber with an average fiber size of 15 denier or coarser and minimum staple length of 3.5 inches for woolen system yarns and 6 inches for parallel (modified worsted) system yarns.

2.1.2.6 Staple Modacrylic

Carpet fiber with an average fiber size of 15 denier or coarser and minimum staple length of 3.5-inches for woolen system yarns and 6-inches for parallel (modified worsted) system yarns.

2.1.2.7 Extractable Matter in Finished Yarn

ASTMD 2257, Not more than two percent, extracted using a single solvent, as follows:

Nylon-cyclohexane
Acrylic-chloroform or ether
Modacrylic-ether

2.1.3 Primary Carpet Backing

Those customarily used and accepted by the trade for each type of carpet tile. Use a back coating compound of synthetic resin or natural or synthetic latex compound. Use back coating quantity normally used in the supplier's product.

2.1.4 Secondary Backing

Should be fiberglass reinforced vinyl hardback for fusion bonded carpet tile. Should be prereacted polyurethane hardback, fiberglass reinforced vinyl hardback, or woven polypropylene fabric adhered with ethylene/vinyl acetate polymer and hydrocarbon resin (hot melt) for woven or tufted carpet tile.

2.1.4.1 Vinyl Hardback

A suitable compounded virgin polymer or copolymer of vinyl chloride resin, plasticized with compatible, primary plasticizers only. Virgin polymer is defined as a polymer or copolymer that has not been processed into a finished product prior to use in the plasticizers which are individually and totally compatible with the polymers or copolymers of vinyl chloride resin. Use compound that is uniform and

free from objectionable odor, and conforming to the following:

Hardback:

Average not less than 0.115-inch in total backing thickness.

Weight:

Average not less than 125- oz. per sq. yd.

Compression resistance:

Not less than 100-pounds per square inch.

Adherence:

No separation of the carpet tile and hardback.

Accelerated weathering:

No cracking, stiffness, brittleness, soft or tacky and no appreciable change in color, when compared to the unexposed sample, after 100 hours in the weatherometer.

Flexibility at 70-degrees F and 30-degrees F:

No cracking, flaking, crazing, or show any other indication of failure.

Moisture absorbency:

Maximum one percent moisture absorbency, after 4 hours submersion in water at 72-degrees F.

Volatile matter:

No more than one percent.

2.1.4.2 Prereacted Polyurethane Hardback

Use a polyurethane fully prereacted thermosetting elastomer made entirely from virgin material and conforming to the following:

Thickness:

Average not less than 3/32-inch in thickness.

Weight:

Not less than 45-oz. per sq. yd.

Adherence:

No separation of the carpet tile and cushion.

Accelerated weathering:

No cracking stiffness, brittleness, soft or tacky and no appreciable change in color, when compared to the unexposed sample, after 100 hours in the weatherometer.

Flexibility at 70-degrees F and 30-degrees F:

No cracking, flaking, crazing, or show any other condition of failure.

Volatile matter:

No more than one percent.

Moisture absorbency:

Maximum one percent moisture absorbency, after 4 hours submersion in water at 72-degrees F.

2.1.4.3 Hot-Melt Back

A woven polypropylene fabric adhered with a suitable compound thermoplastic mixture made entirely from virgin ethylene/vinyl acetate polymer and hydrocarbon resin and conforming to the following:

Weight:

Not be less than 27-oz. per sq. yd.

Adherence:

No separation of the carpet tile and secondary back.

Accelerated weathering:

No cracking, stiffness, brittleness, or soft and tacky, and no appreciable color change, when compared to the unexposed sample, after 100 hours in the weatherometer.

Flexibility at 70-degrees F and 30-degrees F:

No cracking, flaking, crazing, or any other condition of failure. See paragraph entitled "Flexibility."

Hot-melt back:

Maximum of one percent moisture absorbency, after 4 hours submersion in water at 72-degrees F.

2.2 PERFORMANCE REQUIREMENTS

Carpet shall be standard seamless broadloom in 12-foot widths.

2.2.1 Shrinkage

The maximum immersion shrinkage in warp and filling directions is 0.015-inch for vinyl hardback carpet tile and 0.05-inch for prereacted polyurethane and hot melt back carpet tile. The maximum air temperature shrinkage in warp and filling directions is 0.015-inch for vinyl hardback carpet tile and 0.2-percent for prereacted polyurethane and hot melt back carpet tile. Test in accordance with paragraphs entitled "Shrinkage, Immersion" and Shrinkage, Air Temperature."

2.2.1.1 Shrinkage, Immersion

Condition a sample of the specified carpet tile under standard conditions as defined in FED-STD-191 for a 24- hour period. Then mark and measure the specimen at three different locations in the length and width directions; with distances marked to within about 2-inches from the edges of the carpet tile; immerse sample in 110-degrees F water for about 15-minutes; mix 2-grams of sodium alkyl sulfate type of detergent with 50-grams of water at 110-degrees F and apply to pile surface of carpet tile. Scrub sample with a soft bristle brush by stroking back and forth 20 times (10 times in each unilateral direction), and in both length and width directions; rinse well to remove majority of detergent; squeeze and dry at 125-degrees F until dry; again condition under standard conditions for 24 hours.

2.2.1.2 Shrinkage, Air Temperature

Condition a sample of the specified carpet tile under standard conditions as defined in FED-STD-191 for a period of 24 hours. Mark the specimen as specified in paragraph entitled "Shrinkage, Immersion." Place sample on a flat surface in a room or oven at 95-degrees F, plus or minus 5 degrees for a period of 24 hours and measure for shrinkage.

2.2.1.3 Shrinkage, Evaluation

Measure the specimen and compute the percentage of shrinkage using the following formula:

$$\text{Shrinkage} = \frac{(A-B) 100}{A}$$

Where:

A is average of initial measurement, B is average measurements after shampooing.

Report the shrinkage in both the warp and filling directions to the nearest one percent.

2.2.2 Adherence Test

2.2.2.1 Vinyl Hardback

Subject a specimen of the finished carpet tile with hardback attached to accelerated aging by exposure in a circulating air oven for 96 hours at a temperature of 90-degrees F, plus or minus 2-degrees. Remove the sample from the oven and allow to cool to room temperature, grasp the base carpet with the fingers of one hand and the thickness of the hardback with the fingers of the other hand and pull firmly in opposite directions. Tearing of the hardback or separation of the carpet and hardback is not acceptable.

2.2.2.2 Preracted Polyurethane Hardback and Hot Melt Back

Use a finished carpet with an attached secondary backing. Grasp the base carpet with the fingers of one hand and the thickness of the secondary backing with the fingers of the other hand and pull firmly in opposite directions. Tearing of the secondary backing or separation of the carpet and secondary backing is not acceptable.

2.2.3 Flexibility

Secondary backing must not crack, flake, craze, or show any other indications of failure when tested as specified below.

2.2.3.1 At 70-Degrees F

Use a 4-inch by 4-inch specimen. Double the specimen and press flat on itself in any direction. Hold double for 5 minutes. Examine for indications of failure while doubled and after pressed flat. Make the examination visually at a distance of one foot.

2.2.3.2 At 30-Degrees F

FED-STD-501, Method 6511, using one-inch mandrel, plus or minus 1/8-inch.

2.2.4 Colorfastness to Light

AATCC 16E, Use the Xenon arc as the light source. Consider colors that are deeper or equivalent in hue to Row 2 of the AATCC Color

Transference Chart as dark colors; consider those lighter as light colors. Colors for synthetic yarns show a gray scale rating of at least 4 for light shades after the equivalent of two L-4 breaks and at least 4 for dark shades after the equivalent of at least three L-4 breaks. Woolen yarns show a gray scale rating of at least 4 for light shades after the equivalent of one L-4 break and at least 4 for dark shades after the equivalent of two L-4 breaks. Base classification on the AATCC Blue Wool Light fastness Standards L-2 to L-9. Test all colors specified. If the Xenon Arc Fadeometer has a built-in continuous monitor and control device made by the manufacturer, the blue wool standards referenced in AATCC 16E need not be used to judge the L-4 breaks, providing the manufacturer's instructions are followed.

2.2.5 Dry and Wet Cracking

AATCC 8, All colors specified must show a minimum rating of step 4 on the AATCC color Transference Chart.

2.2.6 Pile Coverage

Sufficient to conceal backing.

2.2.7 Tuft Bind

ASTM D1335, The minimum tuft bind in average pounds-force for loop pile is 15 pounds and for cut pile 6-pounds.

2.2.8 Flammability

CPSC 16 CFR 1630, All carpet shall comply with as follows:

ASTM E 648, Minimum average critical radiant flux of 0.50 watts per square centimeter. Test carpet and hardback together, as they will be installed.

2.2.9 Static Control

AATCC 134, Incorporate a permanent static control system to control static build-up to less than 2.0kV. Test at 20 percent relative humidity at 70 degrees F.

2.2.10 Electrical Resistance

NFPA-99, Maximum electrical resistance for carpet shall be 20,000 megohms measured between the floor surface and building or applicable ground material, and shall provide a resistance of not less than 150 kilohms when measured from any point on the floor.

2.3 CALCULATION OF PHYSICAL REQUIREMENTS

2.3.1 Pile Weight

ASTM D 418, Determine the average pile weight in ounces per square yard, except that pile weight of unsheared carpet may be determined by dissecting specimens taken from unfinished carpet before a back coating is applied. Unsheared carpet includes those which are tip sheared or defuzed in a shearing operation where loss of fiber is negligible. Determination by dissecting specimens is only valid to the extent that it completely represents the pile weight of the fully finished carpet. In determining pile weights, make no allowance for the inclusion of any fibers needled or flocked onto or into the primary backing prior to tufting or weaving, or to any such process which is designed primarily to increase the total yarn weight and is not integrally apart of the knitting, weaving, or tufting manufacturing process. In the event of variance in results between ASTM D 418 and the dissection method, the former prevails.

2.3.2 Percent of Fibers in Blend

Determine the average percent of fibers in a blend in accordance with AATCC 20.

2.3.3 Pile Weight of Blend

Determine the pile weight of a blend by multiplying the average percent of each fiber by pile weight and totaling the result. For example, the weight of a blend of 30 percent nylon and 70 percent acrylic with yarn weights of 24 and 35 oz per sq.yd. respectively, shall be calculated as follows:

$$\begin{array}{rcl}
 \text{Nylon} & 0.30 \times 24 & = 7.2 \text{ oz. per. sq.yd.} \\
 \text{Acrylic} & 0.70 \times 35 & = \underline{24.5 \text{ oz. per. sq.yd.}} \\
 \text{Total} & = & 31.7 \text{ oz. per. sq.yd.}
 \end{array}$$

2.3.4 Pile Thickness

ASTM D 418, Determine the average pile thickness of the carpet. Make measurements to the nearest 0.01 instead of 0.10 inch as stated in ASTM D 418.

2.3.5 Pile Density

Calculate the average density (D) as follows:

$$D = \frac{36(W)}{T}$$

Where:

W is average pile weight in oz. per sq.yd., T is average pile thickness in inches.

2.4 CARPET PAD

Carpet pad shall be foam rubber or sponge rubber cushion.

2.5 EDGE STRIPPING

Vinyl edge stripping shall conform to approved sample.

2.6 SEAM TAPE

Tape used in making seams shall be a minimum of 2-1/2-inches wide and shall conform to approved sample.

2.7 BASE

Base shall be vinyl conforming to FS SS-W-40.

Minimum overall thickness of base shall be not less than 0.125-inch, color as selected from manufacturer's standard color range.

Straight style, 4 inches high.

Base shall be furnished in rolls not less than 96-feet long. Corners shall be premolded with wings not less than 2-inches long.

PART 3 EXECUTION

3.1 EXISTING CONDITIONS

The Contractor shall ensure that surfaces to receive carpet are thoroughly clean, dry, dust-free, and in a satisfactory condition to be carpeted. The Contractor shall notify the government in writing of any conditions that will prevent his from producing satisfactory finish work. The start of carpet installation shall be an indication of his acceptance of the surfaces as being satisfactory for installing carpeting and he will automatically assume the responsibility for any unacceptable finish work caused by floor conditions.

3.2 RECOMMENDED PROCEDURES

Installation shall comply with the applicable recommendations in CRI 104, CRI (SGCCI) and CRI (SITFCM), or as specified by the carpet manufacturer. Installation shall match the existing installation if so directed.

Transportation of carpet within the job site shall be the responsibility of the Contractor.

Removal and replacement of furniture shall be or will not be the responsibility of the Contractor, as directed.

3.3 PAD INSTALLATION

Pad shall be laid in the longest possible lengths and the minimum number of sections on concrete subfloors and shall be securely adhered to the subfloor with cement of good quality to prevent shifting, buckling, etc. Bubbles shall be removed and a slight stretch applied to pad. Pad seams shall be laid out so that carpet seams will not fall directly over them.

3.4 CARPET INSTALLATION DETAILS

Carpet shall be installed using the smooth-edge, Roberts tackless-strip method throughout. Tack strip shall be installed continuously at edges of areas to receive carpet. Tack strip shall be securely anchored to concrete floors by means of concrete nails.

Free edges of the carpet, except at walls, shall have an edge stripping of vinyl or aluminum and shall be installed in a nontrip manner.

Carpet shall be stretched in both directions maintaining the seams straight and eliminating wrinkles and buckles. Carpet shall be attached securely at edges and openings. Direction of the carpet pile in each area shall be uniform throughout. Stretching shall be done with power stretchers.

Carpeting shall run under open-bottom items, such as heating convertors, and shall be installed tight against columns, walls, and cabinets so that exposed portions of the floor are covered with carpet. Carpet shall be installed around floor outlets and similar obstructions.

Broadloom carpet shall be installed using smooth-edge, Roberts tackless-strip method throughout. Tack strip shall be installed continuously at edges of areas to receive broadloom carpet. Tack strip shall be securely anchored to concrete floors by means of concrete nails.

Free edges of carpet, except at walls, shall have an edge stripping of aluminum and shall be installed in a nontrip manner.

Broadloom carpet shall be stretched in both directions maintaining the seams straight and eliminating wrinkles and buckles. Carpet shall be attached securely at edges and openings. Direction of the carpet pile in each area shall be uniform throughout. Stretching shall be done with power stretchers.

Installation of carpeting shall be deferred until work by other building trades has been completed including painting. Carpet and carpet tiles must be smooth, uniformed and secured. Install with the carpet pile laying in the same direction as well as where there is a pattern or

design. Refer to the drawings for the direction of the pattern. Fit cutouts such as door, jambs, columns, and ducts, neatly and securely.

3.4.1 Carpet Tile Location

Install carpet tile wall-to-wall in rooms and areas indicated on drawings. Include all material indicated, specified, or necessary for a completely finished installation.

3.4.2 Extra Carpet Tile

Furnish three cartons of carpet tiles of each pattern and color in addition to the quantity required for installation. Furnish extra carpet tile, for replacement use, of the same manufacturer, type, and quality as the installed carpet tile; provided in original cartons and properly marked.

3.4.3 Substrate Preparation

Inspect rooms and areas to be carpeted. Before installation, verify that concrete floors comply with the requirements on moisture content recommended by adhesive or carpet manufacturer's instructions. Repair holes, rakes, depressions, or rough areas using material recommended by the carpet manufacturer. Grind raised areas or ridges smooth. Provide floor free of any foreign materials and swept broom clean. Comply with requirements for conditioning adhesives and minimum floor temperature before, during, and after installation as recommended by the carpet and adhesives manufacturers instructions. However, in no case may floor temperature be less than 60 degrees F for 24 hours prior to, during, and after installation. Do not permit traffic or movement of furniture or equipment in carpeted areas for at least 24 hours after installation. Carpet installation constitutes validation by the Contractor that the substrate and conditions in the area meet all requirements for satisfactory installation.

3.4.4 Accessibility

Installed carpet tile shall be removable. Ensure that the exposed area is capable of being restored to its original condition by replacing the removed tiles or installing new tiles of the same manufacturer, type, and quality.

3.4.5 Molding

Finish carpet edges meeting hard surface flooring with molding. Install in accordance with the manufacturer's instructions.

3.5 SEAMS

Length seams shall be trimmed and made in accordance with the manufacturer's specifications and the following:

Carpet shall be laid in the same direction, unless specifically indicated otherwise and approved.

No seams that are perpendicular to doors or entryways shall occur at doorways or entryways.

Seams occurring at doors and parallel to the doors shall be centered directly under the door, unless otherwise specified.

Seams occurring at corridor changes of direction shall follow wall line parallel to carpet direction.

Cross joints necessary due to the length of rolls received shall be located to avoid occurrence at conspicuous locations, near doors, or at pivot points, and must be approved prior to seaming.

Seams shall be kept to the minimum practical. Seams, where required, shall be hot-melt taped. Seams shall have a breaking strength of not less than 100 pounds. Seams shall be completely free of puckering and shall lie flat. Cut edges shall be free of fraying. Matched seams shall be straight, and patterns, where provided, shall match in every respect. Seams shall be completely invisible.

3.6 PROTECTION OF CARPET

During work, carpet shall be protected by dropcloths or heavy reinforced, nonstaining kraft paper.

At the completion of the work, the covering shall be removed, the carpet vacuum-cleaned, soils removed, and the carpet left in an approved condition.

3.7 REMNANTS

After completion of carpet installation, usable remnants, as determined by the Contracting Officer, shall be separated by type, color, and pattern and rolled and wrapped to protect them from dirt and moisture.

The Contracting Officer, shall separate the carpet by color, type, and pattern and roll and wrap each item to protect from dirt and moisture, and delivered to the Government at a location specified by the contracting officer. All other remnants shall become the property of the contractor.

3.8 ACCEPTANCE PROVISIONS

3.8.1 Repairing

Damaged and unacceptable portions of completed work shall be removed and replaced with new carpeting to match at no additional

cost to the Government.

3.8.2 Cleaning and Protection

3.8.2.1 Cleaning

After installation, remove all debris, moldings, scraps, and other foreign matter. Remove any soiled spots or adhesive from the face of the carpet with the appropriate spot remover. Clip any protruding face yarn with sharp scissors. Vacuum the carpet tile until clean.

3.8.2.2 Protection

Carefully protect installed carpet tile with heavy, reinforced, nonstaining kraft building paper or polyethylene film of an approved quality and thickness. Lap and secure edges of covering widths. Keep covering in repair and replace damaged portions. Remove protective covering when directed by the contracting officer.

-- End of Section --

CONSTRUCTION SPECIFICATIONS OF TEAM 2 AND DOC
SECTION 09682 Carpet And Carpet Tile

<u>DATE REVISED</u>	<u>DESCRIPTION OF REVISION</u>	<u>BY WHOM</u>
Original issue 9/14/90	Issued for review by all of DES	Haynes
1/9/91	Incorporated comments by DCB	Flanagan